

Amendments to the Claims

Sub 1

1 1. (Amended) A method for assigning codes in a CDMA wireless  
2 communication system in which a plurality of wireless terminals communicate via  
3 a plurality of channels, said method comprising the steps of:  
4 determining propagation characteristics of said plurality of channels; and  
5 assigning spreading codes to said plurality of wireless terminals based on  
6 said propagation characteristics of said channels.

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1 2. (Amended) The method of claim 1 wherein said step of assigning  
2 spreading codes comprises the steps of:  
3 choosing a target wireless terminal; and  
4 assigning a spreading code to said target wireless terminal.

1 3. (Amended) The method of claim 2 wherein step of assigning a  
2 spreading code to a target wireless terminal comprises the step of:  
3 performing a random code search to obtain an improved code for said  
4 target wireless terminal which is an improvement over a current code of said  
5 target wireless terminal.

1 4. (Original) The method of claim 3 wherein said step of performing a  
2 random code search comprises the step of randomly searching available codes  
3 until an improved code is found.

1 5. (Original) The method of claim 3 wherein said step of performing a  
2 random code search comprises the step of randomly searching a subset of  
3 available codes for the best code in said subset.

1 6. (Original) The method of claim 3 further comprising the step of:  
2 performing a gradient search of codes in the signal space area  
3 surrounding said improved code.

1 7. (Original) The method of claim 3 further comprising the step of:

2 performing a gradient search of transmission delays for said improved  
3 code.

1 8. (Original) The method of claim 3 further comprising the steps of:  
2 performing a gradient search of codes in the signal space area  
3 surrounding said improved code; and  
4 performing a gradient search of transmission delays for said improved  
5 code.

1 9. (Original) The method of claim 1 further comprising the steps of:  
2 maintaining a processing set of said plurality of wireless terminals;  
3 individually assigning codes to said wireless terminals in said processing  
4 set; and  
5 adding a wireless terminal to said processing set when said step of  
6 individually assigning codes to said wireless terminals in said processing set has  
7 converged and repeating said step of individually assigning codes.

1 10. (Original) The method of claim 1 further comprising the step of:  
2 transmitting said codes to said plurality of wireless terminals.

1 11. (Amended) A method for assigning a spreading code to a wireless  
2 terminal in a CDMA wireless communication system comprising the steps of:  
3 determining propagation characteristics of a communication channel of  
4 said wireless terminal; and  
5 assigning a spreading code to said wireless terminal based on said  
6 propagation characteristics of said communication channel.

1 12. (Amended) The method of claim 11 wherein said step of assigning a  
2 spreading code further comprises the step of:  
3 performing a random code search for an improved code relative to a  
4 current code assigned to said wireless terminal.

1 13. (Original) The method of claim 12 wherein said step of performing a  
2 random code search comprises the step of:  
3 searching available codes for an improved code.

1 14. (Original) The method of claim 12 wherein said step of performing a  
2 random code search comprises the step of:  
3 searching a subset of available codes for the best code in said subset.

1 15. (Original) The method of claim 12 further comprising the step of:  
2 performing a gradient search of codes in the signal space area  
3 surrounding said improved code.

1 16. (Original) The method of claim 12 further comprising the step of:  
2 performing a gradient search of transmission delays for said improved  
3 code.

1 17. (Original) The method of claim 12 further comprising the steps of:  
2 performing a gradient search of codes in the signal space area  
3 surrounding said improved code; and  
4 performing a gradient search of transmission delays for said improved  
5 code.

1 18. (Amended) A method for use in a CDMA wireless communication  
2 system comprising the steps of:  
3 receiving channel propagation characteristics of a plurality of wireless  
4 channels; and  
5 assigning spreading codes to a plurality of wireless terminals based on  
6 said received channel propagation characteristics.

1 19. (Amended) The method of claim 18 wherein said step of assigning  
2 spreading codes comprises the steps of:  
3 choosing a target wireless terminal; and  
4 assigning a spreading code to said target wireless terminal.

1           20. (Amended) The method of claim 19 wherein step of assigning a  
2   spreading code to a target wireless terminal comprises the step of:  
3           performing a random code search to obtain an improved code for said  
4   target wireless terminal which is an improvement over a current code of said  
5   target wireless terminal.

1           21. (Original) The method of claim 20 wherein said step of performing a  
2   random code search comprises the step of randomly searching available codes  
3   until an improved code is found.

1           22. (Original) The method of claim 20 wherein said step of performing a  
2   random code search comprises the step of randomly searching a subset of  
3   available codes for the best code in said subset.

1           23. (Original) The method of claim 20 further comprising the step of:  
2           performing a gradient search of codes in the signal space area  
3   surrounding said improved code.

1           24. (Original) The method of claim 20 further comprising the step of:  
2           performing a gradient search of transmission delays for said improved  
3   code.

1           25. (Original) The method of claim 20 further comprising the steps of:  
2           performing a gradient search of codes in the signal space area  
3   surrounding said improved code; and  
4           performing a gradient search of transmission delays for said improved  
5   code.

1           26. (Original) The method of claim 18 further comprising the steps of:  
2           maintaining a processing set of said plurality of wireless terminals;  
3           individually assigning codes to said wireless terminals in said processing  
4   set; and

5 adding a wireless terminal to said processing set when said step of  
6 individually assigning codes to said wireless terminals in said processing set has  
7 converged and repeating said step of individually assigning codes.

1 27. (Original) The method of claim 18 further comprising the step of:  
2 transmitting said codes to said plurality of wireless terminals.

1 28. (Amended) Apparatus for communicating with a plurality of wireless  
2 terminals via a plurality of channels, said apparatus comprising:  
3 a channel estimator for determining channel propagation characteristics;  
4 and  
5 a code optimizer for assigning spreading codes to said plurality of wireless  
6 terminals based on said channel propagation characteristics.

1 29. (Amended) The apparatus of claim 28 wherein said code optimizer  
2 comprises:  
3 a memory storing computer program instructions;  
4 a processor for executing said stored computer program instructions;  
5 said computer program instructions defining the steps of:  
6 choosing a target wireless terminal; and  
7 assigning a spreading code to said target wireless terminal.

1 30. (Amended) The apparatus of claim 29 wherein the computer program  
2 instructions defining the step of assigning a spreading code to a target wireless  
3 terminal further define the step of:  
4 performing a random code search to obtain an improved code for said  
5 target wireless terminal which is an improvement over a current code of said  
6 target wireless terminal.

1 31. (Original) The apparatus of claim 30 wherein said computer program  
2 instructions defining the step of performing a random code search further define  
3 the step of randomly searching available codes until an improved code is found.

1           32. (Original) The apparatus of claim 30 wherein said computer program  
2 instructions defining the step of performing a random code search further define  
3 the step of randomly searching a subset of available codes for the best code in  
4 said subset.

1           33. (Original) The apparatus of claim 30 wherein said computer program  
2 instructions further define the step of:  
3           performing a gradient search of codes in the signal space area  
4 surrounding said improved code.

1           34. (Original) The apparatus of claim 30 wherein said computer program  
2 instructions further define the step of:  
3           performing a gradient search of transmission delays for said improved  
4 code.

1           35. (Original) The apparatus of claim 30 wherein said computer program  
2 instructions further define the steps of:  
3           performing a gradient search of codes in the signal space area  
4 surrounding said improved code; and  
5           performing a gradient search of transmission delays for said improved  
6 code.

1           36. (Original) The apparatus of claim 28 wherein said computer program  
2 instructions further define the steps of:  
3           maintaining a processing set of said plurality of wireless terminals;  
4           individually assigning codes to said wireless terminals in said processing  
5 set; and  
6           adding one of said plurality of wireless terminals to said processing set  
7 when said step of individually assigning codes to said wireless terminals in said  
8 processing set has converged and repeating said step of individually assigning  
9 codes.

1 37. (Original) The apparatus of claim 28 wherein said computer program  
2 instructions further define the step of:  
3 transmitting said codes to said plurality of wireless terminals.

1 38. (Amended) Apparatus for communicating with a plurality of wireless  
2 terminals via a plurality of channels, said apparatus comprising:  
3 means for determining channel propagation characteristics; and  
4 means for assigning spreading codes to said plurality of wireless terminals  
5 based on said channel propagation characteristics.

1 39. (Amended) The apparatus of claim 38 wherein said means for  
2 assigning codes comprises:  
3 means for choosing a target wireless terminal; and  
4 means for assigning a spreading code to said target wireless terminal.

1 40. (Amended) The apparatus of claim 39 wherein said means for  
2 assigning a spreading code to a target wireless terminal comprises:  
3 means for performing a random code search to obtain an improved code  
4 for said target wireless terminal which is an improvement over a current code of  
5 said target wireless terminal.

1 41. (Original) The apparatus of claim 40 wherein said means for  
2 performing a random code search comprises means for randomly searching  
3 available codes until an improved code is found.

1 42. (Original) The apparatus of claim 40 wherein said means for  
2 performing a random code search comprises means for randomly searching a  
3 subset of available codes for the best code in said subset.

1 43. (Original) The apparatus of claim 40 further comprising:  
2 means for performing a gradient search of codes in the signal space area  
3 surrounding said improved code.

1 44. (Original) The apparatus of claim 40 further comprising:  
2 means for performing a gradient search of transmission delays for said  
3 improved code.

1 45. (Original) The apparatus of claim 40 further comprising:  
2 means for performing a gradient search of codes in the signal space area  
3 surrounding said improved code; and  
4 means for performing a gradient search of transmission delays for said  
5 improved code.

1 46. (Original) The apparatus of claim 38 further comprising:  
2 means for maintaining a processing set of said plurality of wireless  
3 terminals;  
4 means for individually assigning codes to said wireless terminals in said  
5 processing set;  
6 means for adding one of said plurality of wireless terminals to said  
7 processing set when said step of individually assigning codes to said wireless  
8 terminals in said processing set has converged and repeating said step of  
9 individually assigning codes.

1 47. (Original) The apparatus of claim 38 further comprising:  
2 means for transmitting said codes to said plurality of wireless terminals.